UNITED STATES PATENT AND TRADEMARK OFFICE

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10/699,544	10/30/2003	Bernardo A. Huberman	200313330-1	3054

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EXAMINER
GYORFI, THOMAS A

ART UNIT	PAPER NUMBER
2135	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *1/20/04*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-22 are pending examination.

Information Disclosure Statement

2.   The information disclosure statement (IDS) submitted on 1/20/04 is in

compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure .

statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Azuma

et al. (U.S. Pre-Grant Publication 2002/0106084).

Regarding claims 1, 21, and 22:

      Azuma discloses a method and system for coordinating predefined actions for at

least two nodes, comprising: generating at least two quantum-entangled particles

(paragraphs 0004 and 0007); defining at least two selectable actions being identified by

a first quantum state and a second one of the at least two quantum-entangled particles

being identified by a second quantum state that is different from the first quantum state

(Ibid); sending a respective one of the quantum entangled particles to each of the at

least two nodes (Ibid); detecting a state of a first one of the quantum entangled particles

at a first one of the nodes, whereby a state of each other of the quantum entangled

particles is fixed to the detected state of the first one of the quantum entangled particles

(Ibid); after detecting the state of the first one of the quantum entangled particles,

detecting the fixed state of a second one of the quantum entangled particles at a

second one of the nodes (Ibid); and for at least one of the first and second nodes,

selecting and performing one of the at least two predefined actions, in part, as a

function of the detected state of the quantum entangled particles and the quantum state

identification of the predefined actions (Ibid, and paragraph 0006).

Regarding claim 2:

Azuma further discloses comparing the detected state to the quantum state

identifications, and in response to finding a matching state, performing the predefined

actions identified by the matching state (paragraphs 0005 and 0046).

Regarding claim 3:

Azuma further discloses generating a pseudorandom code as a function of the

detected state of quantum entangled particles (paragraph 0006), and selecting and

performing one of the at least two predefined actions as a function of the pseudorandom

code (Ibid).

Regarding claim 4:

Azuma further discloses generating a substantially pseudorandom code at both of the first and second nodes (paragraph 0006).

Regarding claim 5:

Azuma further discloses storing the characteristics of the pseudorandom code at the first and second nodes, wherein generating a pseudorandom code at both of the first and second nodes includes generating a pseudorandom code as a function of the stored characteristics and the detected state of the quantum entangled particles (paragraph 0006).

Regarding claim 6:

Azuma further discloses generating quantum entangled photons and sending a respective one of the photon pairs to each of the at least two nodes (paragraph 0004).

Regarding claim 7:

Azuma further discloses generating pairs of photons having consistent polarization and generating a result that is consistent for each node as a function of the polarization (paragraph 0222; see also Azuma, claim 12).

Regarding claim 8:

Azuma further discloses identifying an expected lifetime of the entangled state of the quantum-entangled particles (); and wherein detecting a state of a first one of the quantum-entangled particles includes detecting the states prior to the expected lifetime expiring (paragraph 0047).

Regarding claim 9:

Azuma further discloses regenerating the at least two quantum-entangled particles as a function of a predefined interval (paragraph 0047); sending a respective one of the regenerated quantum-entangled particles to each of the at least two nodes (Ibid); and wherein detecting a state of a first one of the quantum-entangled particles and detecting the fixed state of a second one of the quantum-entangled particles include detecting the states of the regenerated quantum-entangled particles (Ibid).

Regarding claim 10:

Azuma further discloses wherein regenerating the at least two quantum-entangled particles as a function of a predefined interval includes regenerating the at least two quantum-entangled particles when an expected lifetime of the entanglement of the quantum-entangled particles expires before the state of the first and second quantum- entangled particles is detected (paragraph 0047).

Regarding claim 11:

Azuma further discloses wherein defining at least two selectable actions includes defining two selectable actions at a first node, further comprising sending the two selectable actions to a second node and using the detected state of the quantum-entangled particles and the two selectable actions at the second node to audit the selection and performance of one of the two selectable actions at the first node (paragraphs 0046 and 0111).

Regarding claim 12:

Azuma further discloses wherein selecting and performing one of the at least two predefined actions includes independently selecting and performing one of the at least two predefined actions (paragraph 0118).

Regarding claim 13:

Azuma further discloses wherein independently selecting and performing one of the at least two predefined actions includes selecting and performing one of the at least two predefined actions at a first one of the nodes without communicating with other ones of the nodes after sending the respective one of the quantum-entangled particles to each of the at least two nodes (paragraph 0185).

Regarding claim 14:

Azuma further discloses wherein defining at least two selectable actions at each of the nodes includes defining at least two encryption functions at each of the nodes and selecting and performing one of the at least two encryption functions (paragraph 0042, and Figs. 14-16).

Regarding claim 15:

Azuma discloses a method for generating an output for at least two nodes, the method comprising: generating at least two sets of quantum entangled particles, each set including at least two quantum entangled particles (paragraphs 0004 and 0007); sending a respective one of each set of quantum entangled particles to each of the at least two nodes (Ibid); for each set of quantum entangled particles, detecting a state of a first one of the quantum entangled particles at a first one of the nodes, whereby a state of each other of the quantum entangled particles is fixed to the detected state of the first one of the quantum entangled particles (Ibid); for each set of quantum entangled particles, after detecting the state of the first one of the quantum entangled particles, detecting the fixed state of a second one of the quantum entangled particles at a second one of the nodes (Ibid); and at each of the first and second nodes, generating an output as a function of the detected states of the quantum entangled particles from each set of quantum entangled particles (Ibid).

Regarding claim 16:

Azuma further discloses wherein generating an output as a function the detected

states of the quantum-entangled particles from each set of quantum-entangled particles

includes comparing the detected states of at least two quantum-entangled particles at

each node and performing a first function in response to the detected states that match

and performing a second function in response to the detected states that do not match

(paragraphs 0005 and 0046).

Regarding claim 17:

Azuma further discloses wherein generating an output as a function the detected

states of the quantum-entangled particles from each set of quantum-entangled particles

includes generating at least two inputs as a function of the detected states and

processing the inputs to generate the output (paragraphs 0103-0112).

Regarding claim 18:

Azuma further discloses generating at least two bits for the encoding function

and processing the inputs with the encoding function to generate a coding output

(paragraphs 0008 and 0101).

Regarding claim 19:

Azuma discloses a method for coordinating timing of actions at first and second

nodes, the method comprising: generating at least two quantum entangled particles

(paragraphs 0004 and 0007); sending a respective one of the quantum entangled

particles to each of the first and second nodes (Ibid); detecting a state of a first one of

the quantum entangled particles at the first node, whereby a state of each other of the

quantum entangled particles is fixed to the detected state of the first one of the quantum

entangled particles (Ibid); detecting a state of second one of the quantum entangled

particles at the second node after detecting the state of the first one of the quantum-

entangled particles (Ibid); and at the first and second nodes, executing a response at a

coordinated time selected as a function of the detected states of the quantum particles

(paragraphs 0004-0007).

Regarding claim 20:

Azuma further discloses processing at each of the first and second nodes the

detected state to generate an output indicative of the coordinated time and viewable by

a user (paragraph 0007).

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

- Rubinstein, Ariel. "The Electronic Mail Game: Strategic Behavior Under 'Almost

  Common Knowledge'". American Economic Review, Volume 79, Issue 3, pages

  385-391. ©1989 American Economic Association.

- U.S. Patent 7,035,411 to Azuma et al.

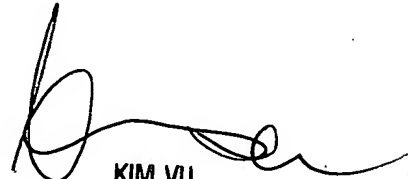- U.S. Patent 7,006,267 to Franson et al.

- U.S. Patent 6,522,749 to Wang;

- U.S. Patent 6,438,234 to Gisin et al.

- U.S. Patent 6,314,189 to Motoyoshi et al.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Gyorfi whose telephone number is (571) 272-3849. The examiner can normally be reached on 8:30am - 5:00pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on (571) 272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TAG
1/17/07

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